REMARKS

The foregoing amendments and these remarks are in response to the Office Action dated February 27, 2003. This amendment is timely filed.

At the time of the Office Action, claims 1-14 were pending in the application. Claims 1-14 were rejected under 35 U.S.C. §103(a). The rejections are set out in more detail below.

I. Claim Rejections on Art

Claims 1, 5-9, 13, and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 6,215,206 to Chitayat ("Chitayat") in view of US Patent No. 6,047,461 to Miura et al. ("Miura") and US Patent No. 6,085,527 to Woollenweber et al. ("Woollenweber"). Claims 2 and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chitayat as modified by Woollenweber and Miura and further in view of US Patent No. 4,944,975 to Sheer ("Sheer"). Claims 3, 4, 11, and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chitayat as modified by Woollenweber and Miura and further in view of Japanese reference 7-31113.

Applicant submits that the pending claims are patentable over the prior art. While the support disclosed by Chitayat does support the magnet cluster coaxially, the magnet cluster of Chitayat is disposed either outside or inside of the cylindrically arranged support. To the contrary, the support of the present claims is disposed flush with the cluster. This feature has been incorporated into claims 1, 5-9, 13 and 14.

In the event that the support is arranged flush or aligned with the magnet cluster, as with the arrangement defined in the present claims, the support and the cluster can be secured, if temporarily, to each other, using a sheet wrapped around the outer peripheral surface of the support and the cluster. The electromagnetic reciprocal drive mechanism defined by the present claims seeks to provide a solution to the problems caused when wrapping a sheet of woven cloth around the outer peripheral surface of the permanent

magnet cluster and the support in order to fix them in a drive mechanism where the former is flush with the latter. The prior art arrangements have problems in that the fabrication operation has been difficult because the woven cloth stretches, slips or frays in the application of the adhesive, even having its edges curled up because of the adhesive, and needs to be impregnated with a large amount of adhesive. Cutting is also difficult if a woven cloth such as polyaramid (Kevlar) woven cloth is used, leading to an increase in the cost of such electromagnetic reciprocal drive mechanisms.

The permanent magnet cluster defined in the present claims can be integrally secured to the support by impregnating an adhesive into a sheet wrapped around an outer periphery of the permanent magnet cluster and the support. Chitayat neither teaches nor suggests any solution to such problems, in part because the device of Chitayat is a rotary-linear actuator, the structure of which is totally different from that of the electromagnetic reciprocal drive mechanism defined in the present claims. If a sheet impregnated with adhesive were wrapped around an outer periphery of the permanent magnet cluster and the support of Chitayat, it would not integrally secure the magnets to the support because the support is not flush with the cluster.

For the reasons outlined above, independent claims 1 and 9 are thus believed allowable over the cited prior art. The dependent claims are believed allowable because of their dependence upon allowable base claims and because of the further features recited.

Turning to Sheer, this document discloses the use of epoxy impregnated aramid paper. However, the Applicant notes that the aramid paper is not pure paper, and would thus have the same problems of the aramid woven cloth being difficult to cut.

Applicant notes that the electromagnetic reciprocal drive mechanism defined in the present claims insures sufficient strength despite the use of low-strength pure paper made of pulp instead of high-strength aramid paper, for the material of the wrapping sheet. Such advantages are neither disclosed nor suggested by any cited reference. As aramid paper is difficult to cut, and is hard to impregnate with a sufficient amount of epoxy resin,

the present claims 2 and 10 propose the use of pure paper so that it may be easily cut and fully impregnated with the epoxy resin. A plurality of small holes can be formed in the paper sheet (claims 3, 4, 11 and 12) to enable the full impregnation of a small amount of the epoxy resin type adhesive, and then the impregnated epoxy resin is solidified. The new claims 15 and 16 positively recite that the material of the wrapping sheet or woven cloth is pure paper made of pulp, not aramid woven paper or the like.

As discussed above, the present invention is advantageous in that sufficient strength of the mechanism is insured despite easy fabrication operation thereof, which is neither disclosed nor suggested by Chitayat or Sheer, and any combination of the cited prior art. Thus, the Applicant strongly believes that the present invention would not have been obvious. Reconsideration by the Examiner is respectfully requested.

II. Conclusion

Applicant has made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. Nevertheless, Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicant respectfully requests reconsideration and prompt allowance of the pending claims.

Respectfully submitted,

Date: 5-27-03

J. Rodman Steele, Jr.
Registration No. 25,931
Mark D. Passler
Registration No. 40,764
Akerman Senterfitt
Post Office Box 3188
West Palm Beach, FL 33402-3188
Telephone: (561) 653-5000